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The Treatment of Acute Non-Suppurative Otitis Media

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THE TREATMENT OF ACUTE NON-SUPPURATIVE OTITIS MEDIA.*

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Under the title given may be included the several acute inflammatory manifestations of the middle ear structures which have been described by various authors as respectfully: Acute myringitis, tubal salpingitis, acute catarrhal otitis, otitis media acute, etc., all being closely related, and in fact rapidly merging one into the other, so the chief consideration in treatment is as to stage or degree.

Owing to the frequency with which acute catarrhal otitis media occurs, particularly during child life, being usually described as "earache," and so often due to adenoids[1], its prompt and correct treatment is of the greatest importance in order not only to relieve the annoying symptom of pain, but also in order to avoid those more serious sequela which may otherwise follow.

Certain patients are prone to attacks of acute ear trouble, while others are never thus afflicted. As all are alike subjected to practically the same exposures or climatic conditions, it becomes apparent that such susceptibility must, in a great measure, be due to local troubles present in those patients thus afflicted.

Chronic inflammation of the Schneiderian membrane, extending through continuity of tissue to the Eustachian tube, is an important etiological factor to be considered and, in a general way, defective nasal respiration associated therewith, whereby the nasal secretion, instead of being evaporated, is retained, so through deterioration it causes or intensifies the chronic inflammation alluded to. In the very young, enlarged tonsils and adenoids can be justly credited with being the almost invariable causes of the obstruction, which accounts for the defective nasal respiration, while in older patients intra-nasal hypertrophies, or intumescence from local or systemic causes, are often additionally present. Foreign bodies in the nose may be a cause of nasal occlusion or infection at any age, as well as traumatism, and particularly the use of powerful styptics, as Monsel's solution, upon intra-nasal tampons in order to control post-operative hemorrhage. Acute otitis media may also result from traumatism of, or inward extension of inflammation from the external auditory canal, or it may occur as an acute eruption of a chronic

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suppurative otitis media with perforated membrana tympani.[2]

Acute catarrhal otitis media has been, by different authors discussed conjointly with the acute suppurative condition. While the acute form of middle ear inflammation may, up to a certain stage, be regarded as "non-suppurative," it is a fact conceded by nearly all writers that pathogenic invasion into the middle ear is an ever present factor[2],[3] and that the degree of virulence from such invasion is tempered by the character or combination of varieties of organisms present[4],[5] as well as by both the amount of infective material introduced and the resisting power of the patient. The natural collection of infective material about the tubal orifice is largely due to the structural formation of the post nasal space, as well as to the proximity of this orifice to Luschka's tonsil which, when either hypertrophied, or in that not infrequently observed condition of degenerative atrophy, becomes an ideal culture field for pathogenic organisms. Attention must also be called to the supra-tonsillar fossa, the infective material in which, beginning with early adult life, is in different ways a factor to be remembered. It has also been granted that defective teeth may have an important causative relationship.[6]

Owing to the short and more open Eustachian tube in child life the chance for ingress of pathogenic material, so freely available from the ever present adenoid growth, is increased, hence middle-ear trouble in young children may be generally regarded as suppurative, even though there may exist no rupture of the membrana tympani or external discharge, owing to the short and more patulous Eustachian tube, and in fact, after such infection, an unrecognized suppurative otitis may for months continue, the escaping and swallowed secretion from which is the cause of persistent gastric disturbance.[1],[7] In such case the pain is regarded as neuralgic and the recurrent febrile disturbance is too often accredited to "teething."

The causative factors have been thus cited as it is the duty of the attending physician, after the subsidence of an acute ear trouble, to advise as a prophylactic step the removal of all obstructive or contaminating tissues present in the upper air passages, and thereby correct the defective nasal respiration so as to avoid the tendency to recurrence of acute ear troubles.

In the development of an acute otitis media, there is first a brief stage of intra-tympanic rarefaction, owing to tubal stoppage, with the membrana tympani retracted, whereby, owing to negative pressure, serous or hemorrhagic exudate in the middle ear is induced, which in turn, through imprisonment, soon causes pressure with a

bulging drum head, and may be considered a second stage. As the secretion is retained, it becomes more viscid.

Among the symptoms of acute middle ear trouble, pain may be regarded as the most important, though it is not always present, and is more liable to be of brief duration in young children, owing to the shorter and relatively wider Eustachian tube, whereby an exit of the middle ear secretion is more readily secured than with adults. Subjective sounds and reduced hearing acuity with fullness of ear are promptly noted by adults, though rarely complained of by children. In adults autophonia is commonly reported, and vertigo occasionally, while delirium and convulsions are chiefly manifested in children. In all cases there is some febrile reaction, which in children may be quite pronounced, constituting the most important symptom. In fact fever when of sudden development, particularly in children, may at any time, suggest ear trouble.[2]

Among the exciting causes the exanthemata and grippe are of the most importance from a numerical standpoint, though typhoid, acute nephritis and pneumonia must be mentioned. When grippe is the cause, there seems to be an increased danger of serious otitic infection. Another common exciting cause is the getting of water in the post nasal space while bathing, or from the improper use of a nasal douche, in which case the water entering the Eustachian tube carries in microörganisms from its entrance.[2] In fact, any exposure which results in coryza may cause an acute ear trouble, particularly when vigorous sneezing occurs, or when the nose is too vigorously and incorrectly blown.

In acute catarrhal otitis the element of pain, in the first stage, is due to the forced process of exudation from sudden rarefaction, which explains how the escape of a very minute quantity of fluid after a paracentesis may give such prompt relief while later, in the second stage, it is due to intra-tympanic pressure and bulging of the drum head from the imprisoned secretions, which are augmented by the inflammatory process. With this understanding, it becomes apparent how promptly resolution will follow if in the early stage the imprisoned secretion can be released, so air will be substituted for fluid in the tympanum. The natural process whereby a spontaneous cure often occurs if from absorption so, through subsidence of the swollen tubal mucous membrane, a vent is given to the imprisoned secretion, and incidentally an entrance for air.

The ideal treatment, therefore, in this condition, when possible to be employed, is the prompt and early use of the intra-tympanic air douche. Inflation for this purpose has been both praised[8], [14] and

condemned[3] by different writers, though all appreciate the fact that a cure can be facilitated by the re-establishment of tympanic drainage and the restoration of atmospheric equilibrium. The question is, how may this be safely and readily accomplished? The tube being stopped, an increased pressure is required, particularly by the method of Politzer, in order to pass the obstruction, and in fact with the necessary pressure required in order to effect Politzerization, the fluid in the tympanum may be driven into the mastoid cells, or the drum-head ruptured. Furthermore, infective material from the tubal entrance may thus be driven through to the tympanum so the patient is subjected to both intense pain and the danger of further infection. With this view, it is not strange that many writers should decry the use of the air douche and should instead advise paracentesis whereby is imitated nature's alternate plan of termination when resolution fails.

The attempts at inflation which have been decried have, I believe, always been intermitting impacts, and when of enough power to pass the obstructed tube have often caused the undesirable phenomena previously cited. In acute intestinal obstruction, as from intussusception, intermitting douches, where the fluid is allowed each time to escape, have proved ineffective, and even harmful, while the constant stream, with intermitting halts, but no escape has passed the obstruction and given relief.[9]

In a previous paper, presented before this association six years ago[10], I described a method of inflation based upon the philosophy outlined in the preceding paragraph, it being a method whereby I have on several occasions successfully aborted an acute catarrhal otitis. As I have not since learned of others putting in practice the method described, I fear it failed to catch the eye, as well as the ear, of otologists generally.

The method alluded to, in brief, consists of the use of a constant in place of the intermitting air current, having at hand means for absolutely controlling and regulating the air pressure[10], and always employing a catheter, and using a vapor or nebula in place of plain air for it must be a poor nebula indeed that is not better and more aseptic than unmedicated air.

The philosophy of this method is based upon the fact that as the vapor enters the tube it proceeds to the point of obstruction, and then retreats along the path of entrance, hence there is both a constant ingoing and out-going current which *cleanses the tube of secretion,* particularly about the orifice. The continuous action of the air current is naturally most intense at the point of obstruction, so between

its action and the effect of the medicament employed, the obstruction is shortly passed, and the patient experiences a bubbling in the ear, which is also heard by the operator through the auscultation tube. I begin with about a 6-lb. pressure, and gradually increase it to even 15 lbs. or until an entrance is effected. In these acute conditions I have found a chloroform vapor to be most effective. After the obstruction is passed, I have the patient tilt the head so the affected ear is uppermost, and allow the constant stream, with occasional breaks, to enter the middle ear for possibly a minute or so. In the selection of a catheter, I prefer one of silver with a bulbous tip, and am particular that the distal opening shall, for a short distance, be reamed out and made conical or rounded, so as to have no angular edge, or in other words, so the opening will be rounded inwardly, as is the outer bulbous end rounded outwardly.

I have also a suggestion to make relative to the introduction of the catheter. The methods usually advised require the touching of the point of the catheter against the posterior pharyngeal wall, or else against the upper surface of the soft palate, either of which steps will often cause retching. My method is to introduce the catheter in the usual manner, but with a slight rotating pressure of the dependent point of the catheter against the septum, as it is gradually entered, until the posterior end of the septum is reached, when, owing to the rotating pressure, the curved end tips up to the horizontal, when the catheter point, by being rotated downwardly, or in the opposite direction about 180 degrees, will enter the Eustachian orifice. In the case of a sensitive nose, I precede the introduction of the catheter by a brief application of cocaine to the septum and tubal orifice.

If the first treatment is given in the forenoon, I advise a repetition in the afternoon, and again daily for the next day or two, though I have in several cases had a complete cessation of all pain after one treatment. For patent reasons, the treatment outlined can only be employed with patients who can visit the office, and with adults, or those resolute enough to permit the introduction of the catheter. In all other cases the treatment of election is the employment of heat. Tobacco smoke has often been blown in the external ear with benefit, though, with our modern office equipment, much better methods are available for the use of heated air. Latterly I have been using a hot air apparatus, made by The Victor Electric Co., of Chicago, which I have found to be both efficient and convenient to use. Another device which I have found of particular value in effacing the lame feeling or soreness about the ear, which can be used during

office treatments, is a mechanical masseur. I have for some time been using a cleverly constructed device of this kind, operated by compressed air, being both small in size and of ample power, and made by the Globe Nebulizer Co., of Battle Creek, Mich.

Generally speaking, in the treatment of acute ear inflammations, hot aqueous douches are, for many reasons, to be preferred. For several years, in such cases, I have depended largely upon the frequent employment of a hot one per cent. carbolized douche, to be used at least every two hours, while during the interval dry heat is continuously applied with the aid of a Japanese hot box. In order that the douche will be properly used, I give the patient a printed sheet of directions, of which the following is a copy:

"DIRECTIONS FOR THE USE OF INJECTIONS IN THE EAR.

"Dissolve one teaspoonful of Carbolic Acid in a teacupful of hot water, and stir with a teaspoon until thoroughly mixed or dissolved. Then add enough warm water to make one (1) pint. It should when used, be as warm as can be comfortably borne by the ear. The best kind of a syringe to use is a Fountain Syringe, of not less than the No. 2 size, which holds one quart. Put in the bag the warm solution which has been prepared and hang the bag as high as the top of a door, so that when the patient is seated there will be a fall of about four (4) feet from the bag to the patient's ear, though the height of fall should be so adjusted as to never cause discomfort. If at all painful lower the bag.

"Use the smallest size of hard-rubber tip, which should be slightly introduced just within the opening of the ear, but *must never be pressed in against the ear so hard as to cause pain or prevent the free escape of the injection* into a bowl which should be held below the patient's ear.

"Use the entire pint in this way in one ear and, when required, use a similar quantity in the same way in the opposite ear. Repeat the injection 8 to 12 times daily as directed."

During the interval between office treatments in mild cases, and always in the more severe cases, it is best for the patient to be put to bed. Internal medication as indicated is to be administered, particularly the so-called vegetable arterial sedatives as aconite and gelsemium, which I find much better adapted to allay the febrile tendency than are the more modern coal tar antipyretics, though for the simple allaying of pain, antipyrin is valuable. The intestinal tract must be kept free and the diet regulated. Leeches in the past have been much used, though I believe the hot phenol douches are to be preferred. The application of cold, with the ice bag, I regard as of value only in the early stage of mastoid involvement. Cotton moistened with a 10% solution of phenol in glycerin should, in the early stage, be loosely packed in the external canal and against the drum-head, from which benefit is derived through the process of osmosis.[11] Another agent which I sometimes apply in a similar manner upon cotton, which is both cooling and anodyne, is Baume Analgesique. Even in cases wherein the air douche has been successfully employed, I advise the use of heat, and the following of the other suggestions for treatment enumerated.

The desirability of cleansing and keeping clean, so far as possible, both the nasal passages and post nasal space is advised by all writers. For cleasing the tubal orifice, what could be more efficient than the air douche derived from the continuous air current used as described, being far more effective than can be the use of sprays, etc. Another method I employ for softening and removing tenaceous secretions in this locality is by the use of a long and delicate cotton application, bent like an Eustachian catheter, the end of which is liberally wrapped with cotton and moistened with some glycerin preparation. Personally I use Mxt. D. P. which contains about 75 per cent of glycerin, with six per cent each of soda and borax.[12] Proper blowing of the nose is another means whereby the advantage of air cleansing can be obtained, when nasal obstruction is not too pronounced, and must be done very gently, and at first only with both nostrils open, with the head bent well forward over a washbowl or sink while the patient is standing. After this the handkerchief can be used gently in the usual manner.

Lastly, if there is not a prompt subsidence of pain and other manifestations, paracentesis must be done, and the call for this step hinges largely upon the stage of the disease and upon the character and location of the intra-tympanic contents. In the more mild forms of infection, the retained secretion is a serous transudation in the atrium, while in the more virulent infections, which are considered suppurative, the tympanic vault becomes involved, and in fact, as soon as this location is known to be the field occupied, a free paracentesis should be done without delay.

I must add that after the drum head opening, whether by spontaneous rupture or by incision, I have failed to appreciate any disadvantage from the use of the hot carbolized douche, when used with the precautions specified on the printed sheet of directions, and when douches can be employed with sufficient frequency, I greatly prefer this method instead of the use of the so-called "dry treat-

ment," until the discharge has practically ceased, when the latter method is admirable until the drum-head has healed.

Following a paracentesis, gentle suction with a Siegle pneumatic speculum employed once daily in the external meatus, in connection with other indicated treatment, including inflation, will facilitate rapid recovery, the patient meantime practicing auto-inflation by the Valsalvan method several times daily, and, after the first week, the use, for a few days, of pneumatic massage with a mechanical aural masseur[13] will not only further facilitate the cure, but will also help to diminish or prevent the tendency toward impaired ossicular mobility, which so often follows acute inflammation of the middle ear.

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